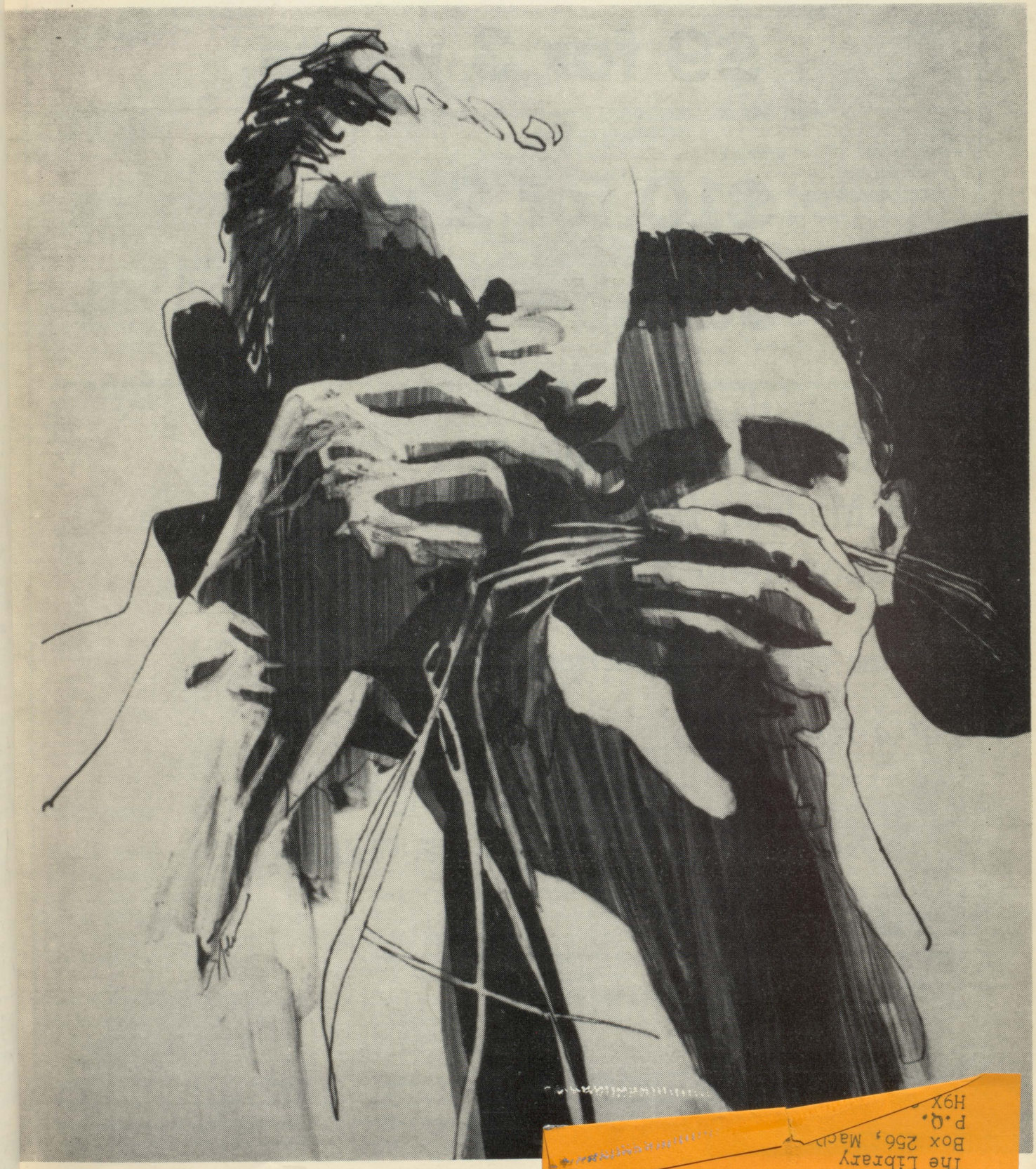
THE macdonald JOURNAL

FEBRUARY 1975



MACDONALD COLLEGE OF McGILL UNIVERSITY

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In this Issue

Journal Jottings

Professor Ralph Estey believes. He is not taking an opposing tack simply to be controversial, although there was a twinkle in his eye when he first discussed his article several months ago.

"Some of my colleagues are not going to agree with me," he said. "There could be some interesting reaction, particularly from a few 'gloom and doom' people whose predictions for the future are, in my opinion, far too pessimistic." The twinkle gone, he continued, "I am deadly serious when I say that, with present scientific knowledge, there is no reason for shortages, hunger, or mass starvation in the future. Other factors beyond the scientist's control may well mean that much of the world's population will continue to go to bed hungry, but it will not be because of a lack of agricultural knowledge or lack of ability to provide food."

Naturally, I was anxious to read his article. I have and am filled with more optimism than I have had for some time. I have also been doing considerable thinking about those other factors. You may want to, too.

February can be rather a gloomy month. I am delighted that you will have this opportunity to read this quite cheerful view of the future.

Hazel M. Clarke

Editorial

It is heartening to read for once an optimistic and encouraging viewpoint of the world's agriculture and food situation such as Professor Estey has provided us in this issue. It is often said in the publication business that bad news outsells good news 10 to 1 in terms of subscriptions. Just pick up almost any newspaper or news magazine today and you will certainly get this impression. People by human nature seem to be attracted by this type of reading.

With all the reports and talk about food crises, energy crises, inflation, recession, high food prices, possible fertilizer and seed shortages, it is easy to see why we would become pessimistic about the future of farming and the general economy. The more one reads and thinks about these recent events, the more one can convince himself that they are really going to happen as predicted. It becomes almost a self-fulfilling prophecy type of situation that occurs during times of economic hardship and crisis.

I suppose it is only natural that this type of "jumping off a sinking ship" thinking and activity occur during hard economic times as people attempt to minimize their losses. But there are always the optimists who remain and "weather out the storm" until economic conditions are better. It is upon these people that the future of agricultural food production rests. This dedication and hope in the future often presents these agricultural producers with extreme financial hardships. But their role and responsibility to the future of our nation is so great that we can only hope they will not be overly influenced by all the pessimistic reports we have all been reading. We as a nation of food consumers owe these people a tremendous debt for "hanging in there" during tough times so we could have an abundance of high-quality, low-cost food. Let's only hope that our nation's leaders give the farm producers their just deserve before it is too late after too many producers have "thrown in the towel" for the last time. That would be an economic calamity that may make the present one seem quite trivial.

Gordon Bachman

A Plant Scientist States:

Future Food Requirements *Can* Be Met

by Professor R. H. Estey,
Department of Plant Pathology

Man has been so successful in the transformation of plants to suit his food requirements that a mutual dependency has developed; man cannot, at present, survive without the plants he has created and many of the plants, such as wheat, maize, and tomatoes are so different from their ancestral forms that they cannot survive in the competitive natural world without the aid of man.

In spite of the obvious progress that has been made in the modification of plants to fulfill the food and fibre needs of man, plant scientists know that there are many shortcomings in the traditional methods of plant culture and in the conversion of energy and minerals through plants to food. In the first place, plants make very inefficient use of the available solar energy (light and heat) in the production of food, and many agricultural plants waste much more energy than do others. For example, yields of oats or spinach are less than half those of silage corn or sugar cane, even though they may be grown in the same general area and receive about the same energy from the sun. Seeds and fruit form very slowly, which means that cereal grains cannot be harvested until several months after planting and most fruit trees produce only one annual crop. Plants cannot be grown for several months of each year on vast areas of the earth because of adverse weather conditions.

All of these shortcomings can be largely overcome by plant scientists with present-day knowledge. But they are not being overcome because of economic and political considerations.

For the past hundred years western man has not been producing food primarily for human consumption. The real incentive has been its profitability, and a shortage of food rather than a surplus has been preferred. When a farmer plans for next year's production, he is inclined to think in terms of its monetary returns rather than in terms of the human need for his product. This is natural, and quite understandable, in a society whose economy is based on the profit motive. However, when faced with the problem of feeding all of the people who will be on this earth in two or three generations from now, the scientist thinks in terms of the technical possibilities rather than in profits. In this regard it should be comforting to know that science and technology are already sufficient for the enormous task of controlling and feeding this growing population. The major worry of the plant scientist is whether or not the necessary political, religious, economic and other interlocking social decisions will be made in time to prevent needless mass starvation.

Every sane and thoughtful person knows that the present rate of population growth must be controlled or the time will come when there won't be standing room on this earth. Many methods for the control of reproduction are well known but to advocate or compel the use of any one of them is a political, religious or social decision. In other words, the lack of population control is not due to a lack of knowledge. Similarly, any future shortage of food will not be due to a lack of the necessary knowledge for its prevention.

Ultimately milk, meat, and vegetable alternatives that are nutritionally superior to some of the present day products will be mass produced in multistoried structures over (or under) the market place. These manufactured foods will require less energy than conventional foods do for their composition and they will be much more precisely tailored to the nutritional needs of those who consume them. For example, it is well known that most adults, particularly those native to tropical countries, cannot digest natural milk. It is not so well known that a milk substitute can be manufactured from grass—without the intermediate use of the cow—that is a more satisfactory food for these people. This is not a kind of synthetic milk of the future but a present-day natural, protein rich product, a product that can be stored indefinitely and needs only the addition of water to make it a wholesome food. Furthermore, about 20 times as much protein can be manufactured from good grass and clover as is now produced in the form of meat or milk.

The United States Department of Agriculture has an experimental factory that is producing a dry, fibre free, white powder from fresh, green alfalfa juice that is nearly 90 per cent protein. The remainder of the alfalfa plant can still be used as a food for ruminant animals.

In regions of the world where it rains nearly every day, seed crops will not ripen and the people there make use of underground parts of

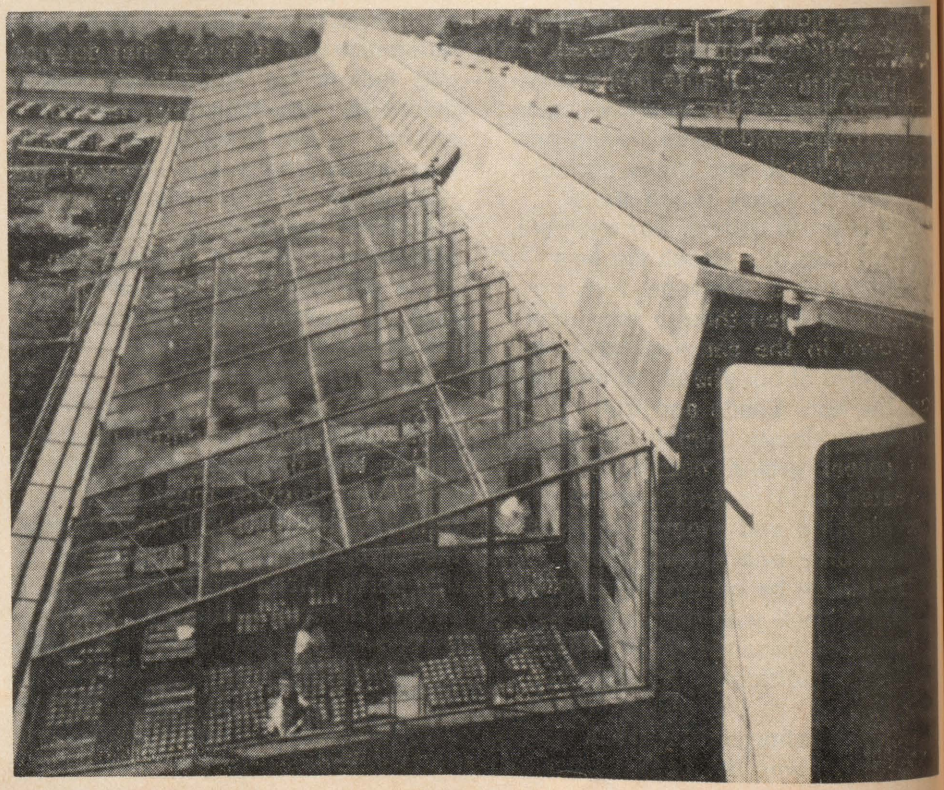
soilless culture of plants for food.

plants such as cassava, or bananas and coconuts for food. Except for coconuts, these are low-protein foods. Wherever rainfall is heavy, one of the best methods of limiting soil erosion is to grow crops, such as forages, that can be cropped continuously without ever leaving the soil bare. By extracting protein mechanically from the forage more than a ton of dry protein for human use can be produced from each acre of land and the fibre that is left over is still a useful fodder for cattle. This type of agriculture and food manufacture would go a long way toward a solution of the protein-deficiency in the diet of millions of people.

Long before a significant amount of food for man is manufactured there will be an intermediate period during which more and more food will be produced by means which seem to be unorthodox by present standards. A step in this direction is seen in the increasing popularity of hydroponic and similar types of soilless vegetable culture.

Plastic domed hydroponic units in Ontario are already producing more than 100 tons of superior, pesticide-free tomatoes per acre each year. Under ideal conditions hydroponic gardeners routinely produce at least 12 times more marketable crop per acre than can the average soil gardener. Although the present cost of producing crops without soil is greater, it is not 12 times greater than the cost of similar crops in soil. Tests have shown that hydroponic tomatoes contain more sugar and more vitamin B1, B2 and C than soil-grown tomatoes of the same size and colour. In addition, the hydroponic gardeners claim the taste of their vegetables is so superior that customers are willing to pay higher prices. Anyhow, cost is not a major consideration when people are hungry, and as the acreage of farmland decreases there will be greater need for soilless culture methods. The amount of vegetables that could be produced under a plastic roof over the median of the Trans-Canada Highway would feed millions of people, and there is no engineering reason why many miles of highways and factories could not have greenhouse-like structures high above them in which soilless gardening could be carried on 12 months of the year. From the standpoint of food production, this is one method of using "waste" space over what may have been good agricultural land.

Relatively little has yet been done to make use of so-called "wastes" for the production of food. This is not because of a lack of technical skill but because of economic considerations. Among the most successful ventures in the conversion of waste material to food, from both the practical and the economic standpoint, are those that use the wastes from paper mills. In Finland a factory is being constructed with the object of producing 10,000 tons of edible protein per year through the use of a common Paecilomyces fungus. Similar projects, utilizing yeasts and fungi for the conversion of waste forest products to food, are nearing the pilot plant stage of development in Canada. Initially, the vegetable protein produced from these food factories will be used to supplement animal feeds, although, except for its flavour, it is a suitable food for humans.



Harvesting cultured oysters from the sea.

Many successful experiments have shown that various bacteria, yeasts, and other fungi can be used to produce food from waste materials under conditions requiring neither soil nor sunshine at any stage. Some microbes can produce protein 8,000 times faster than cattle and 2,000 times faster than poultry. Moreover, microbial protein that is slightly richer than fishmeal can be easily preserved, for instance by drying, and its shelf-life can be prolonged almost indefinitely. It also has the advantage over fishmeal in being of a constant composition and as reproducible as an industrial product. Microbial protein, and the protein extracted from grass, can now be textured, flavoured and combined with other food materials in such a way as to be good imitations of fish, veal, chicken or cheese. In addition these foods can produce twice as many food calories as chicken and half as many again as steak. Because of its non-shrink properties a pound of textured protein is equivalent in food value to at least two pounds of oven-ready chicken. Tests at the University of Western Ontario have shown that certain kinds of fungi (related to mushrooms and yeasts) grow well when exposed to a mixture of natural gas, mineral water and compressed air. One of the organisms they use is over 50 per cent protein and it can double its mass in about six hours. Compare this to most green plants, which do well to double their mass in six days, or to most animals which, during their best growth period, require more than 16 days to double their weight. The ability of microbes to convert various gasses to useful foods has been known for many years and this knowledge has led scientists to believe they can use bacteria or fungi to convert the waste or "flare" gas of oil refineries to food. It has been estimated that 100 million tons of this gas is flared off throughout the world each year. Anyone who has seen the ever-present flames over oil refineries will have an idea of the amount of wasted energy that could be converted to food from this source alone.

According to the magazine Nature (Vol. 252, Page 9, Nov. 1, 1974) the British Steel Corporation wastes the equivalent of 30 million tons of coal annually. Although waste heat from industries cannot be directly converted to food, it may be used as an inexpensive means of heating greenhouses for year-round food production, or ponds of water to accelerate the growth of fish and water-plants. Scientists at the University of New Brunswick are at present studying ways by which the heat of the proposed Point Lapreau nuclear power plant may be so used. Fish and algae in well-managed ponds are an excellent means of producing food and of recycling various domestic wastes. In at least two densely populated countries a species of algae found in sewage ponds is already being used as an inexpensive source of valuable chicken feed.

The discovery in Japan that algae of the species Chlorella can be grown in the dark has encouraged fresh efforts to culture it as a food both indoors and in outdoor ponds. Dried Chlorella is about 45 per cent protein, 20 per cent fat, and 10-20 per cent carbohydrates, and it is rich in vitamins A and C. Countries endowed with the necessary sunshine and warmth, such as Algeria, Mexico, and Niger, could produce

more than 50 tons, dry weight, of algae per pond-acre each year.

The potential of water-based rather than land-based sources of food is just beginning to be seriously studied. Off the coast of British Columbia the culture of oysters is already so successful that there are optimistic predictions of a yield of oyster meat in excess of 100,000 tons from about 1,500 acres off the Strait of Georgia.

Manure is a waste product of negative value (negative value because of the cost of getting rid of it) in feedlots and other establishments where many animals are kept in relatively confined spaces. Mushrooms, which contain about 37 per cent protein on a dry weight basis, are presently being grown on composted horse manure and other organic materials. Under ideal conditions each square foot of a mushroom bed will produce about 15 pounds, fresh weight, of mushrooms per year and mushroom beds are constructed in layers one over the other. This means that each square foot of "ground space" can be made to produce as many multiples of 15 pounds as there are stories of mushroom beds. In this way mushroom production is already one of the leading producers of food on a per-acre-of-land basis and one of the oldest and most productive users of waste materials.

A novel use of manure by a South African farmer with two thousand pigs is the conversion of two tons per day into methane gas. Instead of using this gas to run his car or to heat his home, he could make use of the technology that is presently available and produce microbial protein from the gas.

These have been just a few examples of how present day waste products can be used for the production of food, but one of the major "wastes" is food itself. Innumerable instances of wasted and inefficient use of food could be cited. For example, it has been estimated (Time magazine, Dec. 23, 1974) that the 100 million dogs and cats in the United States reproduce at the rate of 3,000 per hour, compared to the 415 human babies born every 60 minutes. Americans spend more than six times as much on pet food as they do on baby food, and they use enough pet food to nourish the third of the world's population that is hungry. In 1970 it was estimated that the dogs and cats of France were consuming two million metric tons of processed food each year, from some 280 million cans. Canadians cannot feel self-righteous about this because there is no doubt that a similar per capita use of pet foods occurs in Canada as in the United States and France.

In the category of "wastes" in relation to food production, many people would include the thousands of acres of good agricultural land that is presently being used for the production of tobacco for smoking and grapes for wine, or remaining idle in the form of cemeteries, lawns, golf courses, etc. Some rethinking of current social values may eventually have to take place, but this should not be necessary in North America for many years to come because there are so many relatively new strategies to be employed for the production of food.

Space permits only a passing reference to one or two more of these. For example, botanists at Nottingham University can inject living bacteria into single plant cells and get the resulting plant-bacterium hybrid to grow into a whole plant. Since the bacteria they chose can "fix" nitrogen from the air into a form that plants can use, there is now the possibility of creating new cultivars of wheat, oats, barley and other grasses that can do without nitrogen fertilizers.

A new era of enzyme engineering was initiated by cornstarch processors in the United States when they developed a method for the conversion of cornstarch, which is in large supply, into fructose for use as an alternative to cane sugar for sweetening beverages. This breakthrough in the economical use of enzymes is a hopeful sign that plant scientists will soon find a way of converting the cellulose of trees and other plants to foods for human consumption. Cellulose is a renewable resource that could be of almost unlimited supply. But the greatest untapped source of carbon, for sugars and other energy-rich foods, and of nitrogen for proteins, is in the air that is all around us. The day may come when it will be economical to make much more direct use of basic chemical components for the construction of foods than one can visualize today. In the meantime the food needs of man will be met by a combination of traditional agricultural methods, the industrialized use of microorganisms, the culturing of plant and animal cells in complex multistoried food factories completely independent of soil, pesticides, and the vagaries of the weather and by a more enlightened use of present day "wastes".

CORN SEED PRODUCTION

by Professor G. Gendron, Department of Agronomy

It is a regular and highly recommended practice to buy new corn seed every year because the seed harvested from the farm fields would produce corn plants different from the parent plants. The reason is that commercial corn seed is hybrid, meaning that it originates from mother plants which may be and usually are physically different from the material grown by farmers. The production of hybrid corn seed involves a certain number of steps which will be described briefly in this article.

The basic principle in hybrid seed development is to find two pure genetic lines (inbreds) which will give a desirable plant and high yields when combined together. One inbred is considered as the female and the other as the male. The pollen of the male plant present in the tassel, is transferred on the silks (ear) of the female plant where it will fertilize the ovule to give rise to the kernel or the seed. Inbred lines are not found at random. They are carefully developed by transferring manually the pollen of the tassel of a plant on the silks of the same plant for many generations. This results in a plant which is normally short and low-yielding. In a breeding program, inbreds are selected for their qualities and their ability to produce desirable plants when crossed with another one. Inbreds can be developed to confer earliness, high-yielding capacity, or resistance to different pests. In most cases these characteristics are not found together on the same plant. If one wishes to obtain a hybrid with earliness and high-yielding capacity, he combines one inbred with one of the traits and another one with the other. Crossing has a special effect known as heterosis which often makes the hybrid superior to the inbreds added together.

Crossing one inbred with another one results in a single-cross hybrid. The combination can be described as: A (female) x B (male) = AB (single cross). When this level of hybridization is not satisfactory to incorporate all the qualities required, it is possible to go to another stage of crossing. Then, the single-cross is considered as the female and a third inbred C is used as the male giving the following scheme: AB (female) x C (male) = ABC (three-way hybrid). The double-cross hybrid is obtained by combining two single-cross plants together as follows: AB (female) x CD (male) = ABCD (double-cross hybrid).

In breeding programs, pollinizations are made manually to obtain a stock of maximum purity, but this method is not practical in commercial seed production since it would require tremendous manpower to achieve the pollinizations required every year. Pollen grains are tiny particles which fly and disperse by themselves over a certain distance (25 feet and more if the wind is blowing). When two inbreds A and B are planted next to each other, a certain number of pollen grains from A will reach the silks of A and B and vice-versa. The seed resulting from this open pollination will be approximately 50 per cent inbred depending on the synchronization of the flowering. If one wants to obtain only a hybrid, AB, where A will be the female and B the male, he must then remove the pollen or the tassel of A. In plant breeding, this practice is called emasculation and in commercial corn seed production, detasseling.

The fields where seeds are produced are planted in a special pattern where two rows of male plants (B) are planted side by side with four rows of female plants (A).

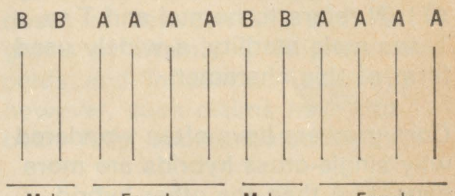


Figure 1. Planting pattern for corn seed production.

Prior to pollination (when the tassel can be felt by the hand inside the whorl of top leaves) workers are sent in the field to pull the tassels off plants A. The plants B are allowed to tassel normally and they shed pollen which reaches the silks of A and fertilizes the ovules to form a hybrid AB.

The other method of obtaining hybrids is by using male sterile plants. A character has been found which, incorporated by breeding in a plant, will prevent the normal formation of pollen in the tassels. This method is advantageous where manpower is scarce and expensive since detasseling is not required. In the production of the hybrid AB, for example, A does not have the ability to shed pollen while B does. This means that the only pollen present will originate from B and the hybrid AB will be formed naturally. However, a disease, southern corn leaf blight, is associated with male sterility and since 1972 all commercial corn seed is produced normally. Indeed, tags on seed bags indicate whether the seed has been obtained by detasseling (N) or by male sterility (T). N refers to normal and T to Texas male sterility, a widely used form of this character.

Corn growers have often wondered why single-cross hybrids are more expensive than the other hybrid forms. It is due to the fact that female inbreds have a low yielding capacity. Therefore, the seed yield per acre is low; it ranges from 25 to 50 bushels depending on the type of inbred. With three-way and double-cross hybrids, the female plant is a single-cross and it has the yielding potential conferred by by the hybrid vigour resulting from crossing. Generally, the production of single-cross hybrid seed requires essentially twice the area and the labour to harvest the same quantity of seed as a three-way or a double-cross.

The proportion of single-cross marketed has increased recently because these hybrids are more reliable in many aspects. The maturity requirement of each variety lies within narrow limits compared to double-crosses, the plants are more uniform in size, maturity and resistance to pests, and the yields can now match the others favourably. In marginal zones such as ours, single crosses have definite advantages for grain production. However, for silage the other types rate as well, and since their prices are lower they should be considered.

In summary, corn seed production involves many steps where strict controls are required to obtain genetic purity and high quality material. The industry responsible for this is a vital link in field corn production since farm produced seed would rapidly revert in low yielding plants susceptible to diseases and unadapted to intensive farming.

Vitamin C and Soluble Solids in Field and Greenhouse Tomato Varieties

by Drs. Calvin Chong and Bernard Bible, Department of Horticulture

Today we are more nutrition conscious than ever before. Perhaps such an attitude was inevitable in view of our increasing consumer awareness and persistently skyrocketing food prices. Governments in Canada and the United States are now considering implementation of programs aimed at monitoring the food value of all produce. Soon all foods bought in supermarkets will be labelled as to their individual nutrient content. Before being released, new vegetable and fruit varieties will have to meet minimum nutrient standards.

Production and Consumption of Tomatoes

The tomato, probably our most popular garden vegetable, ranks second only to the potato in terms of commercial importance as a vegetable. Quebec and Ontario are the two major tomato producing provinces in Canada (Table 1). Whereas Ontario produces the bulk of processing tomatoes, Quebec produces as much fresh market tomatoes as Ontario. In fact, while acreages of fresh market tomatoes have been decreasing in Ontario between 1968 and 1972, corresponding acreages have been increasing in Quebec (Table 1). Despite this trend, Quebec still imports more than two-thirds of all tomatoes sold on the fresh market and provides for only 12 per cent of all tomatoes and tomato products consumed in this province (Table 2). In comparison with the national per capita consumption of 60 pounds fresh weight equivalent of tomatoes and tomato products, corresponding per capita consumption for Quebec is 65 pounds (Table 2).

A most versatile mealtime treat, the tomato ranks among the top four vegetables with highest nutritional ratings. Its nutritive composition conforms almost perfectly with current ideas on proper nutrition since it is low in sugars and carbohydrates and high in various minerals and vitamins, including vitamin C.

Importance of Vitamin C

Vitamin C (ascorbic acid) is a very important requirement in our daily diet. A deficiency in this vitamin results in symptoms such as scurvy (bleeding or swollen gums), and various skin, muscular, and internal disorders. Varied claims, such as by the Nobel laureate Linus Pauling, have been made as to the value of daily large doses of between 2½ and 10 grams of vitamin C in preventing colds and influenza. Apparently, however, such claims have not been fully substantiated by the

Table 1. Tomato production in Quebec, Ontario, and Canada

		Fresh			Processing			Total		
		Acreage	Production	Farm value	Acreage	Production	Farm value	Acreage	Production	Farm value
		acres	mill. lbs.	$ mill.	acres	mill. lbs.	$ mill.	acres	mill. lbs.	$ mill.
Quebec	1968	2,680	21.7	1.30	1,450	15.9	0.28	4,130	37.6	1.58
	1969	2,720	21.8	1.41	950	7.8	0.14	3,670	29.6	1.56
	1970	2,960	26.6	1.62	1,060	13.4	0.27	4,020	40.1	1.89
	1971	3,020	24.5	1.54	1,080	10.3	0.19	4,100	34.7	1.73
	1972	3,080	11.9	1.08	730	2.4	0.06	3,810	14.3	1.14
Ontario	1968	3,879	57.6	3.65	21,358	637.4	15.08	25,237	695.1	18.73
	1969	3,980	52.0	3.90	19.660	476.7	11.63	23,640	528.7	15.53
	1970	3,950	62.8	4.33	19,620	721.2	17.01	23,570	784.0	21.34
	1971	2,970	53.7	3.72	20,030	733.6	17.04	23,000	787.3	10.76
	1972	2,640	46.1	4.37	19,920	655.1	15.21	22,560	701.3	19.57
Canada	1968	7,302	89.6	5.72	23,268	657.9	15.46	30,570	747.4	21.18
	1969	7,400	83.9	6.23	20,900	488.3	11.85	28,300	572.1	17.08
	1970	7,940	103.4	6.98	20,680	734.7	17.28	28,620	838.1	24.26
	1971	6,670	86.9	6.07	21,110	743.9	17.23	27,780	830.7	23.30
	1972	6,300	78.7	7.49	20,650	657.5	15.27	26,950	736.3	22.76

Source: Statistics Canada Quarterly Bulletin of Agricultural Statistics.

medical profession. The recommended daily requirement per person is about 40 milligrams. Fortunately vitamin C is found, sometimes in large quantities, in all fruits and vegetables which are our major sources of this nutrient.

Results of Our Investigations

For the past several years in the Department of Horticulture, we have been studying and comparing the vitamin C content of various vegetables and fruits grown under Quebec conditions. Some of our results shown in Tables 3 and 4 give a comparison of the vitamin C content of various tomato varieties grown under both field and greenhouse conditions. We have also included results on the soluble solids content, which give a crude and rapidly determined indication of the sugar content or sweetness of the fruit.

Depending on the year and the variety, the vitamin C content of field-grown tomatoes varied between 14 and 24 milligrams per 100 grams (3½ ounces, approximate weight of a medium sized tomato fruit) of edible raw portion (Table 3). The vitamin C content of Mac Pink [1], a new pink tomato variety recently released by the Department of Horticulture, was

[1]Seeds of this variety will be sold in the near future by W. H. Perron & Co. Ltd., 515 Labelle Blvd., Laval, Quebec. For technical information on the performance of this tomato refer to: Gyapay, E., B. Bible, C. Chong. 1973. Mac Pink tomato. Canadian Journal of Plant Science, Volume 53, page 645.

Table 2. Consumption of tomatoes and tomato products in Quebec

Tomato and products	Consumption		Percentage self-sufficiency
	Per capita	Total	
	lbs. fresh equivalent	million lbs.	
Fresh	9.3	65.5	31
Catsup	11.4	77.5	—
Canned	12.2	83.0	3
Juice	15.0	102.0	—
Other	17.0	115.6	—
Total	65.0	443.6	12

Source: Ministère de l'Agriculture, Quebec (1969 statistics).

Table 3. Vitamin C content and per cent soluble solids of field-grown tomatoes in Quebec, 1973-1974

Variety	Vitamin C, milligrams per 100 grams edible raw portion		Per cent soluble solids	
	1973*	1974**	1973*	1974**
Commercial field varieties				
Fireball	14	22	4.1	4.2
New Yorker	17	24	4.5	4.3
Glamour	19	23	4.6	4.8
Moreton Hybrid	22	22	4.7	4.8
Mac Pink	21	22	4.3	4.4
Rideau	22	—	4.8	—
Macdonald College pink selections				
Mac 29	17	—	4.2	—
Mac 63	18	—	3.8	—
Mac 73	16	—	3.7	—
Mac 79	14	—	4.4	—

*Sampled on August 23 and 25.
**Sampled on August 22.

Table 4. Vitamin C content and per cent soluble solids of greenhouse grown tomatoes in Quebec, 1973

Variety	Vitamin C, milligrams per 100 grams edible raw portion	Per cent soluble solids
Greenhouse varieties (fall crop)		
Tuckcross	10	4.4
Ohio WR7 (pink)	13	4.1
Burpee Hybrid	17	4.8
Wild tomatoes (greenhouse grown)		
Lycopersicon peruvianum	44	6.4
Lycopersicon pimpenellifolium	50	8.5

consistently high in both 1973 and 1974 and compared well with any of the other commercial varieties. However, the vitamin C contents of other Macdonald College pink selections (Mac 29, 63, 73, 79) were all consistently lower than that of Mac Pink.

The soluble solids content of the field-grown tomato varieties varied between 3.7 and 4.8 per cent (Table 3). To give you an indication of the relative sweetness represented by this range of values, an average McIntosh apple has a soluble solids content of about 14 per cent. It was quite noticeable that in contrast to soluble solids content of 4.3 to 4.4 per cent for Mac Pink, which compared well with other established varieties, the Macdonald College pink selections, Mac 63 and 73, were comparatively low in soluble solids.

According to data taken in 1973, the range in vitamin C content of 10 to 17 milligrams in fall-grown greenhouse tomato varieties was lower (Table 4) than that in field-grown varieties (Table 3).

Factors Affecting Vitamin C

A great deal of variation in vitamin C content can be expected in plants grown at different geographical locations or in plants subjected to different weather. Dry, sunny weather favours accumulation of vitamin C. Furthermore, as shown in Tables 3 and 4, there is considerable variation due to different years, different growing conditions, and different varieties or species. As shown in Table 4, it is interesting to note that wild tomatoes with tiny fruits, grown mainly for curiosity, have a much higher vitamin C content than cultivated types.

Although vitamin C is destroyed to a large extent upon cooking or processing, and during long-term storage, tomatoes retain this vitamin fairly well for several days at room temperature and can be stored in the refrigerator for periods of up to three weeks without any appreciable loss of this vitamin. Tomatoes bought from supermarkets that have been kept in storage for a long time especially during the winter months can be expected to be low in vitamin C. We have found that one such sample of an unknown variety of tomato bought from the supermarket and stored in the home refrigerator for about one week contained only 9 to 11 milligrams vitamin C per 100 grams of edible raw portion.

Conclusion

It has often been said that the tomato is an excellent source of vitamin C. Undoubtedly, because of the high per capita consumption of tomatoes and tomato products (Table 2), the tomato is one of our major dietary sources of vitamin C. However, in comparison with oranges and sweet peppers, which contain respectively 3 and 10 times more vitamin C, the tomato can be considered no more than a fair source of this vitamin. According to Dr. A. L. Forbes, former Director of Nutrition Bureau, Health Protection Branch, and administrator of the recent Nutrition Canada National Survey, certain segments and age groups of the Canadian population suffer from vitamin C deficiency. Work initiated at Guelph University in 1942 and continued from 1950 until fairly recently at Vineland Horticultural Research Institute by the Ontario Ministry of Agriculture and Foods has shown that tomato varieties can be bred with higher vitamin C content than in citrus fruits and with characteristics nearly as good as the best commercial processing varieties. Perhaps there should be more support for the continuation of this type of research work.

The Family Farm

Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

AID FOR BEEF CATTLE RAISERS (revised policy)

Cow Calf Operators

Eligibility: Any producer whose status is defined in Bill 64.

Conditions: a) Have at least 20 cows in production or, in regions where there are special programs under federal-provincial Fred or Arda agreements (1-9), at least 10.
b) Not hold any milk quota after May 1, 1974.
c) Be a farmer in agricultural regions 1, 2, 3, 9 or 12. In regions 4, 5, 8, 10 and 11, regional programs approved by the Department's authorities specify the areas in which the program applies.
d) Regions 6 and 7 and those parts of regions 4, 5, 8, 10 and 11 which are not covered by the wintering grant are eligible for the compensation measure.
e) Applications must be submitted as soon as possible after January 6, 1975 to the local agricultural information office on the proper forms.

How this program differs from the previous one of April 1974

1) The statutory grant is increased as follows: in regions where there is no federal-provincial Fred or Arda agreement,

1 — 30 cows	previously	$25	now	$45
31 — 40 A.U.	"	20	"	40
41 — 75 A.U.	"	15	"	35
75 or more A.U.	"	nil	"	20

— in regions where there is a federal-provincial Fred or Arda agreement,

1 — 30 cows	previously	$30	now	$50
31 — 50 A.U.	"	25	"	45
51 — 105 A.U.	"	20	"	40
105 or more A.U.	"	nil	"	20

2) No increase required in the size of the herd.
3) Male (as well as female) animals weighing from 300 to 700 pounds may now be included in the calculation of Animal Units.
4) No maximum limit of the amount of the grant.

Note: 1 A. U. equals 1,000 pounds of live weight.

Wintering Grant and Compensation Measure (73-74 versus 74-75)

73	74	Tot. 73	Tot. 74	¢/lb 73	¢/lb 74	Compensation	Total ¢/lb
30 Cows $25. × 30	$ 45. × 30	$ 750	$1,350	9¢	16¢	30¢	45¢
40 cows $25. × 30 $20. × 10	$ 45. × 30 $ 40. × 10	$ 950	$1,750	8.5¢	15.7¢	30¢	45.7¢
75 cows $25. × 30 $20. × 10 $15. × 35	$ 45. × 30 $ 40. × 10 $ 35. × 35	$1,475	$2,975	6.9¢	14¢	30¢	44¢
100 cows $25. × 30 $20. × 10 $15. × 35	$ 45. × 30 $ 40. × 10 $ 35. × 35 $ 25. × 20	$1,475	$3,475	5.3¢	12.4¢	30¢	42¢
200 cows $25. × 30 $20. × 10 $15. × 35	$ 45. × 30 $ 40. × 10 $ 35. × 35 $125. × 20	$1,475	$5,475	2.5¢	9.1¢	30¢	39.1¢

Note: The grant per pound is reckoned as follows: number of cows × 70% (calves sold) × 400 lb

$$\frac{\text{Total grant}}{\text{number of lb.}} = \text{cents of grant per lb. of calf sold}$$

Wintering Grant and Compensation Measure
(74-75 versus 73-74 per herd)

	74-75		73-74	
30 cows:				
Wintering grant	$ 1,350.00		$ 750.00	
Compensation measure				
30 × 70% × 400 × 30¢	$ 2,520.00	$3,870.00 $ 193.00/calf	nil	$ 750.00
40 cows:				
Wintering grant	$ 1,750.00		$ 950.00	
Compensation measure				
40 × 70% × 400 × 30¢	$ 3,360.00	$ 5,110.00 $ 182.00/calf	nil	$ 950.00
75 cows:				
Wintering grant	$ 2,975.00		$1,475.00	
Compensation measure				
75 × 70% × 400 × 30¢	$ 6,240.00	$ 9,215.000 $ 178.00/calf	nil	$1,475.00
100 cows:				
Wintering grant	$ 3,475.00		$1,475.00	
Compensation measure				
100 × 70% × 400 × 30¢	$ 8,400.00	$11,875.00 $ 170.00/calf	nil	$1,475.00
200 cows:				
Wintering grant	$ 5,475.00		$1,475.00	
Compensation measure				
200 × 70% × 400 × 30¢	$16,800.00	$22,275.00 $ 166.00/calf	nil	$1,475.00

Producers of F_1 Heifers

Eligibility Any producer whose status is defined in Bill 64 and is under contract with a regional F_1 heifer marketing agency.

Conditions In order to qualify for benefits under this program:

a) A producer must have a contract with a regional F_1 heifer marketing agency stating the number of matings of each cross which were contracted for.

b) Cross-matings must be by Limousin, Chianina or Maine-Anjou bulls on dairy cows.

c) Heifers from these cross-matings must be identified by the following letters tattooed in the ear: Chianina: C. C. V. I. A. F. R.; Maine Anjou: S. C. L.; Limousin: B.S.L. In addition to these breeder's letters, the tattoo must also include the letter for the year (namely F).

d) The heifers must have been born between December 15, 1973 and June 1, 1974.

e) Heifers must have been approved by a selection committee at the time of delivery.

Mode of Payment

The Quebec Department of Agriculture will pay eligible breeders meeting the foregoing conditions the difference between the sale price and the guaranteed price.

These guaranteed prices are as follows: for the first 400 pounds — Limousin half-breds, $1 per pound; Chianina and Maine-Anjou half-breds, $1.10 per pound; and, for each pound over 400, for all crosses, the difference between the average price at the time of sale and 75 cents per pound.

The marketing costs at the regional agency must be paid by the breeder.

To obtain this grant, each breeder must apply to the local office in his region and fill in an application form. He must also produce the necessary vouchers to enable the Department to verify the number of animals sold, the weight and identity of each, and their average sale price.

All this information must be approved by the livestock specialist of the region concerned.

Finishers (800 to 1,200 pounds)

Eligibility Any farmer whose status is defined in Bill 64 regardless of whether he operates a feedlot or a dairy herd or goes in for finishing cattle without being officially recognized as the owner of a feedlot.

Conditions

a) Have sold steers weighing 800 pounds or more for slaughter since July 1, 1974 or have steers for slaughter which will weigh 800 pounds or more on February 1, 1975.

b) With respect to the animals sold and slaughtered, vouchers must be produced establishing that they were the farmer's property and were actually slaughtered (slaughter certificate, invoices from an identified abattoir, auction receipts). Animals still in the farmer's possession will be counted where they are by the Department's inspectors.

c) Find the total number of head in the two categories (slaughtered steers and steers in the farmer's possession), and subtract five. The number thus obtained times 800 pounds average weight times 10 cents gives the amount of the grant to which the farmer is entitled.

d) Apply on the proper forms at the local agricultural information office as soon as possible after January 6, 1975.

e) Undertake to provide the said office, by July 1 each year, on the form specially supplied for the purpose, with an official statement showing the financial situation (balance sheet) of his 800 pounds and upwards steer raising enterprise.

f) Any person who makes a false statement to obtain a grant under the terms of this assistance policy, program or project is guilty of an offence and is liable for the first offence to a fine of $500.

Compensation Measure Finishers	
10 steers (10 — 5) × 800 lb × 10¢	$ 400.00
30 steers (30 — 5) × 800 lb × 10¢	$ 2,000.00
75 steers (75 — 5) × 800 lb × 10¢	$ 5,600.00
100 steers (100 — 5) × 800 lb × 10¢	$ 7,600.00
200 steers (200 — 5) × 800 lb × 10¢	$15,600.00
500 steers (500 — 5) × 800 lb × 10¢	$39,600.00
1,000 steers (1,000 — 5) × 800 lb × 10¢	$79,600.00

Specialized Raisers of 400 Pound Calves

Eligibility Any farmer whose status is defined in Bill 64 and goes in for feeding calves which he buys when they are 10 days old (maximum one month old) and raises them to 400 pounds. The following are, however, not eligible for this program: cow-calf beef cattle raisers; dairy farmers; dairy calves raised and sold for milk production, and F_1 females produced under contract with the provincial government through one of its regional marketing agencies.

Conditions

a) Have sent calves to an abattoir or sold them as feeders since July 1, 1974, or possess for these purposes calves which would reach 400 pounds by February 1, 1975. In order to qualify for this program, the total number of such calves must be at least 25.

b) With respect to the animals sent for slaughter or sold as feeders, vouchers must be produced establishing that they were the farmer's property and were actually slaughtered or sold as feeders (slaughter certificate, invoices from a recognized abattoir, purchase invoices, auction receipts). Animals still in the farmer's possession will be counted where they are by the Department's inspectors.

c) Find the total number of animals (400 pound calves slaughtered or sold for feeding plus those still in the farmer's possession) and subtract 10. The remainder times 400 pounds times 30 cents gives the amount of grant to which the farmer is entitled.

d) Apply on the proper form at the local agricultural information office as soon as possible after January 6, 1975.

e) Undertake to provide the said office, by July 1 each year, on the form specially supplied for the purpose, with an official statement showing the financial situation of his 400 pound calf enterprise.

) Any person who makes a false tatement to obtain a grant under he terms of this assistance policy, rogram or project is guilty of an ffence and is liable for the first ffence to a fine of $500.

Compensation Measure Specialized Raisers of 400 lbs. Calves	
25 calves (25 — 10) × 400 lb × 30¢	$ 1,800.00
50 calves (50 — 10) × 400 lb × 30¢	$ 4,800.00
75 calves (75 — 10) × 400 lb × 30¢	$ 7,800.00
100 calves (100 — 10) × 400 lb × 30¢	$10,800.00
150 calves (150 — 10) × 400 lb × 30¢	$16,800.00

Dairy Producers Compensation Measure (cull cows and calves sold) Annual Quota	
14 cows 100,000 lb × 25¢/100	$250.00
28 cows 200,000 lb × 25¢/100	$500.00
42 cows 300,000 lb × 25¢/100	$750.00

Quebecers are going back to the country

Over the past few years a number of Quebecers have abandoned the city to settle on farms. Even though this phenomenon has not reached the proportions of the 1930s when thousands of people returned to the country, it is nevertheless an important social movement.

Of course, hundreds of Quebec families have for a long time had a cottage on the banks of a river, a lake, or the St. Lawrence.

Also, many families living in town spend their holidays on farms where they help out with the farming, under a program called "Quebec Farm Vacation" set up by the Quebec Department of Agriculture. Nine hundred people have already benefited from this program on 150 vacation farms, which represents 6,000 units and for the farm hosts an income of $30,000.

There are still those who settle down in the country for good. A Quebec Department of Agriculture publication entitled "à la recherche d'une ferme au Québec" mentions in its Foreword that the numerous requests for information received by the Department of Agriculture from citizens anxious to make a start in farming indicate that acquiring a farm is the dream of a large number of city people.

The same document states that to guarantee a person a steady job in the agriculture sector, an investment of $50,000 to $100,000 is needed and sometimes even more, whereas in the industrial field an investment of $10,000 to $20,000 is needed to ensure the same employment conditions.

There is also a warning in the Department's booklet, which gives a mass of detailed information and cautions against the idea of "adventure"; to manage farming operations today one needs to be a veritable industrialist and it is essential to train managers for the future.

Goodbye calves, cows, pigs . . .

Along with the return to the farm there is evidence of a sizable exodus from the country in Quebec. It is not a phenomenon peculiar to Quebec, far from it, for urbanization is a characteristic of almost every industrialized country.

Both the total farming population and the active farming population are decreasing. Employees on farms in Quebec now represent approximately 100,000 workers only, which is half of the number of 20 years ago. The agricultural labour force decreased by 9.3 per cent in 1973 alone.

The total population of the Province of Quebec is six million inhabitants, 80.6 per cent of whom live in cities and 19.4 per cent in the country. The rural population is non-agricultural and agricultural. The latter comprises 305,000 persons, that is, 5.1 per cent of the total rural population.

Subsistence operations are decreasing gradually. They are giving way to controlled operations, most often those of one family, and to a small number of group operations. These changes are resulting in a gradual decrease in the number of enterprises. It should also be noted that direct development, that is, the action of the owner who operates and earns his living from his own farm, is a characteristic of agriculture in Quebec. We have barely a thousand tenant farmers.

Farming was for a long time

Quebec's first industry, but industrial development has changed all this. Today, agriculture most certainly holds first place among the primary industries but it no longer constitutes the principal activity of Quebecers.

Nevertheless we can say that although its relative importance in the economy of Quebec is decreasing, its absolute importance is taking a decided upward swing and Quebecers run no risk of having, in the near future, to resort to synthetic foods.

(From "Quebec at a Glance", Vol. 5 No. 12)

Protect farm-stored grain

While farmers are conscious of insect injury that can occur in the field, they may be less aware of the possibility of stored grain being infested. Granary weevils and flour beetles, for example, can cause spoilage, contamination, shrinkage, loss in food value, and lower seed germination. These losses may be prevented by good management practices, advises K. Bereza, an extension entomologist with the Ontario Ministry of Agriculture and Food.

Measures must be taken before placing newly harvested grain in storage. Clean bins thoroughly, making sure that there is no grain left in corners, cracks, behind partitions, between double walls, on the outside and underneath, or in grain-handling equipment. Then burn or bury the sweepings, so that insects that might be present cannot return to infest the newly binned grain.

Never store new grain on top of old; the insects in the old grain are likely to move to the higher moisture content of the new.

Storage facilities should be repaired, if necessary, to exclude rodents, birds, and moisture. After grain bins are thoroughly cleaned and repaired, they should be sprayed with a protective insecticide to kill any insects that were not removed with the sweepings. It is preferable to spray the bin at least one week prior to refilling.

"Space should be left between feed rooms and grain bins," Mr. Bereza advises. Since feed facilities are difficult to keep clean, they usually harbour insects that easily migrate to the grain bin.

Grain should not be stored in buildings that shelter animals or hay. Mangers, feed boxes and troughs are sometimes insect-infested. In addition, heat from the animals and insulation provided by hay prevents seasonal cooling, thus allowing insects to remain active throughout the winter.

"Grain going into storage should not exceed 14 per cent moisture, since moulds, as well as insects, will thrive in a warm, moist environment," says the entomologist.

(News release by the Ontario Ministry of Agriculture and Food).

Good barn ventilation necessary this winter

Aim to ventilate your barn so well this winter that you would enjoy living in it, advises an Ontario Agricultural College engineering expert. "Good ventilation helps to ensure that your animals remain healthy and produce high quality food quickly," explains Dr. D. R. Pattie.

"Dust, dampness, and stale air appear to trigger respiratory diseases, such as pneumonia," he adds. "It is not surprising that off-flavours in milk are sometimes caused by stable odours, and the quality of other products may also be affected. Odour levels decrease as the excess moisture in the air is removed."

To run the ventilation equipment necessary for drawing air into your barn and expelling it after it has absorbed the building's excess moisture, make sure you have adequate and safe electrical wiring. In addition, always use fuses of the proper size. If they are too big, they will increase the risk of fire by overloading the wiring. Make sure fans, motors, air inlets, and exit shutters are clean and in good working order.

Use insulation to keep as much animal heat as possible in your barn, so that incoming air will be heated and will absorb excess moisture. Eliminate cracks and gaps at loose-fitting doors and windows, and protect the buildings from as much wind and weather as is possible by windbreaks.

(News release from the Ontario Ministry of Agriculture and Food).

This Month with the QWI

A World to Share

(The following is a report on the Fourteenth Triennial Conference, ACWW, Perth, Western Australia, October 8-18, 1974, by Mrs. J. W. Westover, President, QWI. The Conference theme was "A World to Share".)

"I don't mind getting wet," the Lord Mayor Mr. Ernest Lee Steeve told the 1,500 delegates to the Conference of the ACWW as rain fell on their open-air flag-raising ceremony on October 8, 1974. "As a farming man, it is just what I need," he continued as the delegates took refuge under makeshift plastic bag rain hats, umbrellas, and coats. Many tried in vain to keep national costumes dry.

He welcomed the women from 69 countries representing membership of eight million women.

The ACWW flag was handed to Mr. Lee Steeve in a 15-minute ceremony at the Perth Concert Hall where the Conference was to be held during the next 10 days. The flag, which was brought from London to Darwin, served as a focal point throughout the Conference for the Association's Pennies for Friendship fund. The flag, accompanied by a scroll placed in a metal cylinder, arrived in Darwin on July 1, 1974. It was met by the Northern Territorial President and the flag tour organizer. Collections for Pennies for Friendship were made everywhere the flag travelled.

Six beautiful white horses ridden by Mounted Police officers proudly carried the flag to the steps of the concert hall. It was accepted by the President of the New South Wales C.W.A., who carried it to the upper steps and handed it to our ACWW World President. Mrs. Farquharson.

First Plenary Session

This took place in the Concert Hall on Thursday, October 10 with Mrs. Farquharson in the chair. She welcomed us all and thanked us for coming such a long distance to attend the ACWW Conference. The Cercles des Fermières of Quebec have joined the ACWW as associate members. A recommendation that Mrs. Mungo Barr, who has been Hon. Treasurer in ACWW for 10 years, be accepted as a member of honour.

Invitations for the next ACWW Conference in 1977 were received from: India, Germany, Kenya, England and Wales, and Pakistan. This was to be voted on at the last session, but as my plane left that morning I could not attend. We will be notified later about this. In one of our Area meetings it was discussed that the ACWW Conference be held in Canada in 1980.

World President

The term of the World President was discussed very thoroughly at a Constitution Council meeting. Manitoba wished to limit the term of office to three years; Nova Scotia seconded it. C.W.A. suggested a six-year term as three years does not give the President time to visit all her countries. The United States suggested a four-year term and Australia suggested a three-year term. It was passed with 66 for and 40 against that the term remain three years and the President could be reelected for three years.

Accredited Visitor

Someone asked what is an accredited visitor. It was explained that it is a member elected by her society to attend the Conference but not as a voting delegate.

Size of Conference

The Triennial Conference is creating some difficult problems because it is too large. Many suggestions were brought forward and discussed. Should limitations be imposed and how? Suggestions will be sent out to all societies after the next Council meeting in England.

Save Sight and Feed the Hungry Fund

These have been joined together and will be known as ACWW nutrition Education Fund. A trust fund will be set up which will be tax free. Mrs. Orita Dutt spoke on the study of nutrition deficiencies — 14,000 children have gone blind in the last year in India and a team of doctors and nurses will visit many villages. While the children are receiving treatments, the mothers are being trained in nutrition and taught how to feed and help their children. The next project will be in Bangladash where women will be trained and will give much needed vitamins to the children. We hope to start a similar plan in Indonesia and Mrs. Dutt will visit there with Mrs. G. Spry. The fund has had £34,000 donated to it from various organizations. This project will continue and be reviewed at the next Triennal Conference.

There is malnutrition all over the world, even in countries with lots of food. Many diseases arise from eating too much as well as from eating too little and it is up to us all to try and help correct this situation.

Greetings from many countries were read by the Secretary, including those from the Queen of England, the Prime Minister of Canada, and Prime Minister of Tobago and Trinidad.

Study Sessions

We had many of these and they included such subjects as: Home and Family, Health and Happiness, Man and Nature, Communications and Understanding, etc. It would be impossible to go into these sessions in this space, but if anyone would like more information on these subjects, please write to me and I will try my best to send the information.

Flag Presentation Ceremony

This took place on Tuesday, October 8 at 4 p.m. The flags of the 69 countries participating in the Conference were carried in by Girl Guides from Western Australia. The flags were placed at the back of the platform to remain in position until the Conference was over.

We were entertained at many state banquets and functions and on Sunday we had an Interfaith Service with ministers and speakers from many denominations taking part.

Mrs. Marion Fulton was elected Area Vice President for Canada to replace Mrs. Charles Matheson whose term of office had expired.

Handicrafts

All the handicrafts were displayed in the town hall in Perth. It was difficult to find time to go there as it was about a 15 minute walk, but I made it twice and took some pictures of the Quebec entries. Although Quebec did not win any prizes, I want to thank the two members who sent in paintings and the member who sent in a wall hanging. The winners of the contests are as follows:

Wall Hanging — 1st. England, 2nd. Canada (Sask.), 3rd. England; Painting — 1st. The Netherlands, 2nd. Western Australia, 3rd. England and Wales; Ceramics — 1st. India, 2nd. South Africa, 3rd. New South Wales, Australia; Essays — 1st. New Zealand, 2nd. Finland, 3rd. Western Australia.

The World President said at the Conference that the ACWW will in future seek to hold its Conferences only in countries where all its members can be represented. A resolution to this effect arose from the changing world political scene. The ACWW has to face the fact that some countries do not allow the citizens of other countries to enter. The Australian Government had refused to allow Rhodesian passport holders to come to the current Conference so we must be sure that, at future Conferences, all our member societies can send representatives.

We are a non-political, non-sectarian group with the job of serving other people. It is very sad that there are restrictions preventing members from carrying out this service. We are trying to help members in developing societies, but we are stopped by some outside veto on a passport.

Summing Up

Summing up the Conference, I believe that most of us have learned much, met old friends, and made new ones. Mrs. Mungo Barr remarked that when she looked out over the Concert Hall she saw 1,500 public relations officers. She asked us to keep the Pennies for Friendship coming, because it is only through these pennies that we can open the doors for all the people to take part in the projects of ACWW. The President of the C.W.A. then gave Mrs. Farquharson the flag that had travelled from London, England, to all the States in Australia. A cheque for $12,181.22 was presented to Pennies for Friendship.

I wish you could have all been with me at this Conference; it's truly a worth while experience, and I would like to thank the QWI for giving me the privilege of representing you at the ACWW Conference in Perth, Australia.

A Community Project

In 1962 the *Dewittville* WI (Chateauguay-Huntingdon Co.) started a community service which has proved very worth while for the many sports-minded young people and others in the neighbourhood. They started an outdoor skating rink.

a local storekeeper allowed them the use of a vacant lot and the WI spent $230 to buy materials and

olunteer help was recruited to uild the rink.

t is open to anyone in the area or skating and a program is worked ut by a committee of WI mem- ers and a caretaker so that hockey ractices or scheduled games and roomball games may be enjoyed t specific times.

t first the work was done by olunteers but now a paid caretaker ooks after the rink. He gets local elp to put up the boards or clear now after a storm.

winter carnival was first held February 1963. Eighty partici- ants from tots to grandparents ook part. Prizes were given for the est costumes and the canteen rossed over $60. The carnival was iscontinued after 1972. Funds to aintain the rink are raised in any ways. Summer fairs with ingo, games of chance, pony ides, etc., are the most successful. trawberries with cake and ice ream are a popular snack.

outh grants have been received rom municipal councils and do- ations from private individuals to elp with expenses but the WI ontinues to make up the difference.

pkeep to the boards, electricity, nd oil bills and the caretaker's mall salary must be paid. A arger pump was bought and a ome bake sale helped defray the ost. The pump may be rented for nominal sum by anyone in the rea.

n the 1973-74 winter season, xpenses were $419.30 — not too uch when you consider the num- er of people, young and old, who use it to enjoy one of Canada's favourite sports.

Successful Sale Table

Raising funds is always a need in our branches and *Hemmingford* (Chateauguay-Huntingdon Co.) has found a very successful way with their sale table at the local Apple Festival.

Every member donates one article to the table, and it can be sewing, knitting, baking, or jam, etc. Other articles are brought in and sold with the WI keeping 10 per cent of the proceeds. Not only does this add to the funds, but it also gives the members an outlet for their creative arts and baking skills and gives visitors a chance to buy handmade articles and home cooking.

An Enjoyable 50th

Franklin WI (Chateauguay-Huntingdon Co.) celebrated its 50th Anniversary in May '74. Many guests from the County attended and enjoyed an interesting program, the highlight of which was a talk on St. Bernard and Newfoundland dogs by a local breeder. The Canadian Champion St. Bernard stole the show with his friendliness and good manners.

The dining room was decorated with daffodils and after a delicious lunch and anniversary cake, each member received a souvenir jug of maple syrup which was donated by a member. A fine exhibition of handicrafts was on display.

A poem, read by the President and entitled "Fifty Years Ago" dealt with the ways in which the branch had been formed and how the early members had worked so hard to make the WI work. "We owe them a dept we can never repay." So few are left now and we honour them today.

INDIAN PUDDING

4 cups milk
3 tablespoons yellow cornmeal
⅓ cup molasses
2 teaspoons salt
½ cup sugar
1 beaten egg
spoonful butter
½ teaspoon ginger
½ teaspoon cinnamon

Scald three cups milk and stir in cornmeal slowly. Add molasses and salt and stir till thick. Remove from heat and add sugar, egg, butter, ginger, and cinnamon. Pour into buttered baking dish and place in a 300 degrees F. oven. After 30 minutes pour 1 cup cold milk over pudding and bake for 2½ hours. Serve with cream or ice cream.

Dear WI Members:

Singing Carols, reading Christmas stories and poems, a guitar recital of spiritual songs and games were some of the ways we celebrated our Christmas meetings. Typical of the Christmas meetings were those celebrated in **Richmond County.**

Gore met in a member's home and brought gifts to exchange with each other and for each other's very young children or for a child at the Dixville Home for retarded children. A special box was provided for gifts for the Mountain

Cottage Children's Home in Montreal. This home is for convalescent children who cannot be adequately cared for at home after a hospital stay. They answered the Roll Call by handing in a package of candy for the Christmas party.

This branch has an annual project which is making flannel diapers for the Butter's Home in Austin. The price of the Quik Cutters for chopping nuts, eggs, fruit, etc., which they sell for funds, has, unfortunately, risen to $1.25, but they are still available and make excellent shower or hostess gifts.

Eighteen Cheer Boxes were packed at **Cleveland** for sick and shut-ins and for friends in a home for the elderly. They heard a talk on a visit to an apple storage plant in Ontario. They brought in their programs for 1975.

Melbourne Ridge held a Christmas corsage contest and read their new program.

Members at **Spooner Pond** gave "half your weight in pennies" to their "Sunshine" fund and remembered their "Forgotten Patient" in the Douglas Hospital with gifts. They had a sale table after their meeting.

Richmond Young Women each brought a guest to their meeting and held a bingo with groceries as prizes.

At **Richmond Hill** members brought in embroidered quilt patterns. They also prepared cheer boxes and sent a box of clothing and a donation to a retarded children's home. Each member answered the roll call by providing a dozen cookies or paying a fine of 50 cents which went to a welfare fund.

Other branches remembered their senior citizens and planned parties or visits or gave donations towards gifts and cheer boxes. **Milby** held their meeting in an elderly people's home and served lunch to the residents. During the lunch a member played old-fashioned songs and well-known hymns.

A donation was made to the C.J.A.D. Radio Station's Christmas Basket Fund by one branch. Another brought in gifts which the Boy Scouts distributed to needy children. Two branches did not exchange gifts but put a donation in an envelope to go towards a worthy cause or to buy a gift for a child in a home for the retarded.

Fordyce recorded a Christmas reading and sent it to a member in Malawi. A Christmas idea was sent in which could be adapted to any time of the year: Make an apron from several layers of decorative napkins, using a piece of cotton or something similar for the band. As one napkin gets soiled, tear it off and you have a clean one ready.

Congratulations to **Canterbury;** they are now 60 years old. Also to **Scotstown** on their 40th anniversary.

We extend our sympathies to **Aubrey-Riverfield** on their sudden loss of Mrs. Lydia Orr, their Publicity Convener, and to **Bury** losing Mrs. E. Kent in a tragic accident.

Programs are now being prepared. This is International Women's Year and "one of the main objectives of Canada's program will be to educate the public to the changing attitudes concerning women's role in society." (Mrs. McLean, FWIC President).

The ACWW want us all to begin "specific programs and projects." Think about what you can do and share your ideas and plans with us. The New Brunswick Women's Institutes are establishing an international scholarship. This might give you an idea. Mrs. McLean has suggested that every branch could have one particular meeting in a particular month to focus the attention of the community on women in all aspects of life.

Whatever we decide to do in our programs, let them be interesting and vital to today's way of life.

Thank you to all who sent me cards and greetings at Christmas.

Mrs. J. Robertson,
QWI Publicity Convener.

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